USSR   UDC 621.762.001.669

IVENSEN, V. A., EYDUK, O. N., ARTEM'YEVA, S. I., and LUKASHOVA, N. M.

"Plasticity Indicators of Tungsten-Cobalt Hard Alloys As Functions of
Temperature of Production of Tungsten and Tungsten Carbide Powders"

Translation: The influence of reduction temperature and carbidization
temperature during production of W carbide on the plasticity of tungsten-
cobalt hard alloy is studied. It is established that increasing the
carbidization temperature causes a greater increase in plasticity of the
alloy than increasing the temperature of reduction of W oxides. It is
demonstrated that the effect observed results primarily from evaporation
of impurities and the production of a more perfect lattice of carbide
grains at high temperatures of production of the initial powders.
5 tables.

1/1

USSR   UDC 534.26:534.222.2

GAVRIKOV, V. K. and LUKASHOVA, N. Y., Institute of Radiophysics and Electronics,
Ukrainian SSR Academy of Sciences

"Forced Sound Dispersion on the Surface of a Liquid"

Abstract: Two nonlinear effects on the interface of liquids are dealt with
theoretically: the generation of surface oscillations during the mixing of
three-dimensional sound waves, and forced sound dispersion on the surface of
the waves. An investigation is made of the relationship of the threshold of
forced dispersion to the pulse duration and the dimension of the sound spot.
It is shown that along with the threshold of instability with respect to the
excitation of surface oscillations at small pulse durations, (and small beam
apertures), an observation threshold exists, which is determined by the pos-
sibilities of the registration of dispersed sound. Numerical evaluations are
presented, which indicate the possibility of experimental detection of the
discussed effects. 1 figure. 8 references.

1/1

- ? -

USSR   UDC: 8.74

LUKATSKAYA, M. L., UL'YANOVA, G. P.

"System of Programs for Statistical Economic Analysis (PrEStA System)"

V sb. Vopr. postroyeniya i primeneniya statist. modeley ekon. pokazateley
predpriyatiy. Ch. 2 (Problems in the Construction and Use of Statistical
Models of the Economic Indices of Enterprises. Ch. 2), Novosibirsk, 1971,
pp 225-287 (from RZh-Kibernetika, No 4, Apr 72, Abstract No 4V563)

Translation: The authors describe a system of programs of statistical
economic analysis (the PrEStA system) which embraces the principal problems
of correlation-regression multifactor analysis and analysis of dynamic
series. The system utilizes the alpha-translator input language for the
M-220 computer. The system is based on the principle of minimum time
expenditure on the work of the program. All algorithms for statistical
economic data processing are broken down into elementary algorithms and
stored on magnetic tape in the computer. Provision is made for locating
tags of various length on the tape, for motion with respect to this
length, for appending new tags to those recorded, and for erasing some or
all of the recorded tags. The system consists of the following modules:

1/2

USSR

LUKATSKAYA, M. L.

"One Method of Construction of a Dynamic Model"

Raspoznavaniye Obrazov i Regression. Analiz v Ekon. Issled. [Pattern Recog-
nition and Regression Analysis in Economics Studies -- Collection of Works],
Novosibirsk, 1972, pp 106-115 (Translated from Referativnyy Zhurnal Kiber-
netika, No 4, 1973, Abstract No 4V372, by the author).

Translation: A method is suggested for construction of a dynamic model of the
indicators of operation of enterprises on the basis of observations of a small
number of industrial objects.

1/1   42

USSR   UDC: 519.2.33

BORODIN, F. M., LUKATSKAYA, M. L.

"On the Problem of Probabilistic Prediction"

V sb. Mat. metody resheniya ekon. zadach (Mathematical Methods of Solving Economic Problems--collection of works), Novosibirsk, "Nauka", 1971, pp 79-85 (from RZh-Kibernetika, No 9, Sep 71, Abstract No 9V343)

Translation: The authors assume as their initial premise that when predictions are made in economics, the original data on which the prediction is based should be considered random quantities just as should the estimates of economic model parameters found from preceding observations. The model $x(t) = x(0) + at$ is considered, where t is time, $x(0)$ and a are normally distributed random quantities with parameters (x_0, σ_0) and (a_1, σ_1) respectively. The quantities $x(0)$ and a are uncorrelated. Assuming predetermined α and β, prediction is considered possible for those $t > 0$ for which the relation

$$P\left(\left|\frac{x(t) - Mx(t)}{Mx(t)}\right| < \beta\right) \geq \alpha$$

1/2

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USSR

BORODIN, F. M., LUKATSKAYA, M. L., Mat. metody resheniya ekon. zadach, Novosibirsk, "Nauka", 1971, pp 79-85

is satisfied. A study is made of the conditions for parameters α, β, t, $v_0 = \sigma_0/x_0$, $v_1 = \sigma_1/a_1$ under which the above relation is satisfied. Possibilities of applications are briefly discussed.

2/2

USSR   UDC 517.5

LUKATSKIY, A. M., Moscow State University imeni M. V. Lomonosov

"A Theorem From the Theory of Analytic Continuation"

Abstract: It is known that for any increasing sequence of natural numbers
$\{ m_\nu \}$ satisfying the condition $m_{\nu+1}/m_\nu \to \infty$ a sequence of real numbers
$\{ \theta_k \}$ can be found for it such that for each function $f(z)$ that is
analytic at some point z_0, the following expansion obtains:

$$ f(z) = \lim_{\nu \to \infty} \left\{ \sum_0^{m_{2\nu}} \theta_k \frac{f^{(k)}(z_0)}{k!} (z-z_0)^k + \right. $$
$$ \left. + \sum_0^{m_{2\nu-1}} (1 - \theta_k) \frac{f^{(k)}(z_0)}{k!} (z-z_0)^k \right\}. \quad (1) $$

A. I. Markushevich obtained the representation of a function in its holo-
morphicity star for a sequence satisfying this condition. The following
theorem is proven: If expansion (1) is valid for a certain sequence of
1/2

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USSR

LUKATSKIY, A. M.; Matematicheskiye Zametki, Academy of Sciences USSR, Vol 10, No 1, July 1971, pp 57-62

natural numbers $\left\{ m_\nu \right\}$ and of real numbers $\left\{ \theta_k \right\}$, then

$$\varlimsup_{\nu \to \infty} \frac{m_{\nu+1}}{m_\nu} = \infty.$$

the result is derived from certain properties of superconvergent power series. It is shown that if $S_{mk}(z)$ is a superconvergent sequence of its partial sum, then $\varliminf_{k \to \infty} n_{k+1}/n_k = \mathscr{P}$.

2/2

USSR

UDC 523.71.66.066.6

DYTNERSKIY, YU. I., POLYAKOV, G. V., and LUKAVYY, L. G., Moscow Chemical-
Technological Institute Imeni D. I. Mendeleyev

"The Mechanism of the Separation of Aqueous Salt Solutions by Reverse Osmosis"

Abstract: Results are reported explaining the selectivity of membranes based
on the capillary model of semipermeability mechanism. The permeability of a
membrane with respect to the solutions containing various ions is a linear
function of a parameter representing the modified ion field energy in vacuum,
and the selectivity -- a linear function of the inverse value. With increased
strength of the hydrated ion membrane, the permeability of the membrane
decreases while the selectivity increases. Furthermore, it has been shown
that removal of the concentrational polarization by thorough stirring of the
solution increased only slightly -- by 4-5% -- the selectivity of the membrane
towards solutions containing strongly hydrated ions such as Zn^{++}, Cd^{++}, Mn^{++}
or $SO_4^=$, their permeability being increased by a factor of 1.5-2, while the
solutions containing poorly hydrated ions such as K^+, Na^+, Br^-, or Cl^- have
their permeability increased by 20-25%, and the selectivity by 25-30%.
1/1

Organophosphorus Compounds

USSR

UDC 543.422.25:547.241

MAY, L. A. and LUKENICH, O. K., Institute of Inorganic Chemistry, Academy of Sciences Latvian SSR

"NMR Spectra of 1-Hydroxyetyliden-1,1-diphosphonic Acid"

Abstract: The nmr spectra of the title compound (II) were made and compared with that of 1-aminoethyliden-1,1-diphosphonic acid. The spectra of (II) were made in H_2O, D_2O, and D_2O plus traces of dimethylsulfoxide (DMSO) and showed a very clear and symmetrical triplet of CH_3 protons having a J = 13.5 hertz. Splitting of the triplet components, as seen in the spectra of (I), was not observed. The center of the triplet for I & II were similar: 1.0+.1 m.d. for DMSO and 3.2+0.03 for H_2O. The center of the triplet in other cases may be taken to be 8.42+0.05. In contrast to the spectra of (I), some signals (for example the tert. OH-group) were not observed in spectra of (II) before and after the H_2O signal. The triplet and H_2O signal are identical, apparently as a consequence of proton exchange.

1/1

USSR

UDC 543.422.25:547.241

MAY, L. A., and LUKEVITS, O. K., Institute of Inorganic Chemistry, Academy of Sciences Latv. SSR

"PMR Spectra of 1-Aminoethylidene-1,1-diphosphonic Acid"

Abstract: NMR-H[1] spectra (60 Mcps) of the aqueous solution of 1-amino-ethylidene-1,1-diphosphonic acid taken on the instrument INM-3H-60 at room temperature are reported and discussed. In addition to water, a 1:1 mixture of water and deuterium oxide was used as well as water plus deuterium oxide plus dimethyl sulfoxide.

1/1

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USSR   UDC 547.241

LUKEVITS, O. K., and MAY, L. A., Institute of Inorganic Chemistry, Academy
of Sciences Latvian SSR

"Synthesis of Aminoalkyl(aryl)diphosphonic Acids"

Abstract: Compounds $RC(NH_2)/P(O)(OH)_2/_2$ (I) $\rightleftharpoons RC(\overset{+}{NH_3})/P(OH)_2/P(O)(OH)$.
O^- (Ia) were prepared by reacting nitriles with PBr_3. Upon addition of 3g
acetonitrile to 31.8 g PBr_3 under cooling with ice + NaCl, stirring of the
mixture for 20 hrs at room temperature, further stirring at room temperature
for 20 hrs on addition of 19.5 g. glacial acOH, and decomposition with ice
water, 1-aminoethane-1,1-diphosphonic acid (I, Ia; R = Me) was obtained with
a yield of 4.1 g (28%) in the form of a precipitate that formed on evapora-
tion of the solution. On recrystallization from aqueous acetone, 3.5 g.
with m. pt. 277°. 1-phenyl-1-aminomethane-1,1-diphosphonic acid (I, Ia;
R = Ph) was prepared similarly from benzonitrile and PBr_3. Its yield was
51% and its m. pt. on washing with dioxane 188.5-190°. Stirring on addition
of glacial AcOH was carried out for only 4 hrs in the preparation of this
1/2

USSR

LUKEVITS, O. K., and MAY, L. A., Izvestiya Akademii Nauk Latviyskoy SSR, Seriya Khimicheskaya, No 6, 1970, pp 732-734

compound; at this point, the mixture thickened. The product precipitated spontaneously on decomosition of the mixture with ice water, after the mixture had been allowed to stand. The IR spectra of the two compounds were determined.

2/2

- 53 -

Entomology

USSR

UDC 621.014.41

LUKHANIN, V. Ya., Department of Hypoxic States, Institute of Physiology
imeni A. A. Bogomolets, Academy of Sciences, Ukrainian USSR, Kiev

"Study of the Resistance of Some Arthropod Species to Explosive Decompres-
sion and Low Pressure"

Abstract: Daphnia, crayfish, wood lice, cockroaches, flies, and ants were
exposed to explosive decompression of different velocities and values
followed by low pressure. In experiments with explosive decompression of
from 760 to 50 mm Hg, the daphnia died after 45 min, crayfish after 8 hours,
wood lice after 7 hours, cockroaches after 8 hours, flies after 5 hours,
and ants after 7 hours. In experiments with explosive decompression of
20 mm Hg, the daphnia died after 4 min, crayfish after 90 min, wood lice
after 2 hours, cockroaches after 7 hours, flies after 40 min, and ants
after 50 min. Following explosive decompression of 1 to 2 mm Hg, the
daphnia died in less than 2 min, wood lice within 20 hours, cockroaches
within 40 min, flies within 25 min, and ants within 50 min. The survival
time of the arthropods was determined mainly by the degree of hypoxia. The

1/2

USSR

LUKHANIN, V. Ya., Fiziologicheskiy Zhurnal, No 4, 1971, pp 520-526

chitin of the wood lice and ants prevented tissue emphysema and evaporation
of moisture from the body surface, thereby delaying death due to low
temperature.

2/2

TITLE--ANALYSIS OF A DIGITAL SYSTEM FOR MOVING TARGET SELECTION -U-

AUTHOR-(02)-NUFONMOV, YU.A., LUKHAREV, V.A.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, RADIOTEKHNIKA I ELEKTRONIKA, VOL XV, NO 7, 1970, PP
1411-1418
DATE PUBLISHED-------70

SUBJECT AREAS--NAVIGATION

TOPIC TAGS--DIGITAL SYSTEM, RADAR INTERFERENCE, MARKOV PROCESS, MATRIX
FUNCTION, RADAR DETECTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3009/0342   STEP NO--UR/0109/70/015/007/1411/1418

CIRC ACCESSION NO--AP0139146
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0139146
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS ARTICLE CONTAINS AN ANALYSIS
OF A DIGITAL SYSTEM FOR ALTERNATING PERIOD SUBTRACTION USED TO SUPPRESS
PASSIVE INTERFERENCE IN RADAR WITH INTERNAL COHERENCE IN THE PRESENCE OF
SIGNAL REDIATION WITH A HIGH OFF DUTY FACTOR. WHEN USING THE APPARATUS
OF DISCRETE MARKOV CHAINS, RELATIONS WERE OBTAINED FOR THE ELEMENTS OF
TRANSITION PROBABILITY MATRICES AT THE POINTS OF THE ALTERNATING PERIOD
SUBTRACTION CHANNEL ELEMENTS. THE PROCESS OF ACCUMULATING REMAINDERS IS
ANALYZED, AND EXPRESSIONS ARE OBTAINED FOR THE PROBABILITIES OF CORRECT
DETECTION AND FALSE ALARM IN THE FORM OF AN EDGEWORTH SERIES WHEN THE
PROCESS AT THE OUTPUT OF THE QUANTIZER IS A V-CONNECTED MARKOV CHAIN AND
THE MULTIPLICITY OF THE SUBTRACTION IS ARBITRARY. AN EXAMPLE
ILLUSTRATING THE APPLICATION OF THE PROPOSED METHOD OF ANALYSIS IS
PRESENTED. THE DETECTION CHARACTERISTICS FOR A SINGLE ALTERNATING
PERIOD SUBTRACTION SYSTEM WITH BINARY QUANTIZATION IN EACH QUADRATURE
CHANNEL OBTAINED AS A RESULT OF THE THEORETICAL ANALYSIS AND FROM A
COMPUTER EXPERIMENT ARE PRESENTED. GOOD COMPARISON OF THESE
CHARACTERISTICS INDICATES THE CORRECTNESS OF THE INITIAL SUPPOSITIONS
AND THE ANALYSIS METHOD.

UNCLASSIFIED

USSR

NUFONMOV, Yu.A., LUKHAREV, V.A.

"Analysis of a Digital System for Moving Target Selection"

Abstract: This article contains an analysis of a digital system for alternat-
ing period subtraction used to suppress passive interference in radar with
internal coherence in the presence of signal rediation with a high off-duty
factor. When using the apparatus of discrete Markov chains, relations
were obtained for the elements of transition probability matrices at the
points of the alternating period subtraction channel elements. The process
of accumulating remainders is analyzed, and expressions are obtained for
the probabilities of correct detection and false alarm in the form of an
Edgeworth series when the process at the output of the quantizer is a
V-connected Markov chain and the multiplicity of the subtraction is arbitrary.
An example illustrating the application of the proposed method of analysis is
presented.

The detection characteristics for a single alternating period subtraction sys-
tem with binary quantization in each quadrature channel obtained as a result

USSR

of the theoretical analysis and from a computer experiment are presented. Good
comparison of these characteristics indicates the correctness of the initial
suppositions and the analysis method.

USSR   UDC 669.017.11

SIDORENKO, A. P., VASYUTINSKIY, N. A., PECHENKIN, V. P., and LUKHMANOV, L. M.

"Change in the Mass of Titanium Slags During Ingot Cooling"

Translation: It is shown that change in the mass of slag in ingots with
cooling depends on the degree of slag restoration, the porosity and size
of the ingot, and, most of all, on cooling conditions. Methods of deter-
mining the increase in mass of slags when they are cooled are described.
Numerical data on increase in the mass of ingots of titanium slags during
cooling under industrial conditions are given. One illustration, one table,
and five bibliographic entries.

1/1

USSR

UDC 669.295.053.24

SIDORENKO, A. P., VASYUTINSKIY, N. A., PECHENKIN, V. P., and LUKHMANOV, L. S.

"Change in the Mass of Titanium Slag During Cooling of Ingots"

Translation: The change in slag mass in ingots during cooling depends on the degree of reduction of the slag, the porosity and the quantity of slag, and,most of all on the cooling conditions. Methods are described for determining the increase in slag mass during cooling. Numerical data are presented on the increase in the mass of Ti slag ingots during cooling under industrial conditions. 1 figure; 1 table.

1/1

TITLE--MONTE CARLO ALGORITHM FOR CALCULATING UNSTEADY FIELDS OF NEUTRONS
   AND RADIATIVE CAPTURE GAMMA RAYS IN PROBLEMS OF NUCLEAR GEOPHYSICS -U-
AUTHOR-(03)-GOMMERSHTADT, V.YA., DENISIK, S.A., LUKHMINSKIY, B.E.

COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. 1970, 28(1), 51

DATE PUBLISHED-------70

SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY, EARTH SCIENCES AND
   OCEANOGRAPHY
TOPIC TAGS--WELL LOGGING, MONTE CARLO METHOD, ALGORITHM, NEUTRON FLUX,
   GAMMA RADIATION, RADIATIVE CAPTURE, NEUTRON ABSORPTION

CONTROL MARKING--NO RESTRICTIONS.

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/1246   STEP NO--UR/0089/70/028/001/0051/0051

CIRC ACCESSION NO--AP0115263
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0115263
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN EQUATION FOR CALCG. THE
 PROBABILITY THAT A N WOULD NOT BE CAPTURED AFTER A GIVEN NO . OF
 COLLISIONS IS PRESENTED AND IS USED IN CALCNS. OF THE SPACE TIME
 DISTRIBUTION OF N AND OF RADIATION CAPTURE GAMMA QUANTA IN CYLINDRICAL
 AND COAXIAL MEDIA (E.G., BOREHOLES FILLED WITH H SUB2 O OR OIL, OIL
 BEARING STRATA, ETC.). CALCNS. SHOW THAT THE PULSED (N, GAMMA) METHOD
 IS PREFERABLE TO PULSED (N, N) METHODS IN NUCLEAR GEOPHYSICS RESEARCH.

UNCLASSIFIED

USSR
UDC 8.74

GORELYSHEVA, I. V., KATS, E. KH., LUKHOVITSKAYA, E. S.

"Realizing the Debugging Levels in the ALGOL Complex Translator"

V sb. Teoriya yazykov i metody postroyeniya sistem programmir. (Language Theory and Methods of Constructing Programming Systems—collection of works), Kiev-Alushta, 1972, pp 287-294 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V468)

Translation: The characteristic of the debugging levels in the ALGOL translator which translates from the input language (of the ALGOL type) into the ALMO language is given. Each next level offering greater debugging possibilities by comparison with the preceding one makes the program longer. The zero level means that the translator creates the operating program, that is, a program without debugging capabilities. The first level means that the translator creates a program differing somewhat from the operating program, that is, supplemented by instructions offering the possibility in the case of an emergency halt of outputting "rough" diagnostic information. The second level offers the possibility of obtaining more detailed information in the case of an emergency halt: the text of the operator at which the halt took place is printed out, and the halt output is executed if it is given by the programmer in the debugging instructions. The third level corresponds to a program combining the

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USSR

GORELYSHEVA, I. V., et al., <u>Teoriya yazykov i metody postroyeniya sistem programmir.</u>,Kiev-Alushta, 1972, pp 287-294

capabilities of the first and second levels. It is noted that in the future provision will be made in the transistor for a fourth level permitting "expansion" of some interval of operators. By expansion we mean print out of the text of the executed operator and the results of its operation if this operator is an allocation operator.

2/2

1/2   041   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--RADIATION EMULSION POLYMERIZATION OF STYRENE -U-

AUTHOR-(05)-LUKHOVITSKIY, V.I., POLIKARPOV, V.V., LEBEDEVA, A.M.,
  LAGUCHEVA, R.M., KARPOV, V.L.
COUNTRY OF INFO--USSR

SOURCE--KHIM. VYS. ENERG. 1970, 4(2), 173-4

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL REACTION RATE, RADIATION EFFECT, EMULSION
  POLYMERIZATION, STYRENE, GAMMA IRRADIATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1623   STEP NO--UR/0456/70/004/002/0173/0174

CIRC ACCESSION NO--AP0112617
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0112617
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS WERE STUDIED OF
  EMULSION POLYMN. OF STYRENE (I) (K LAURATE (II) WAS USED AS THE
  EMULSIFIER) IRRADIATED WITH GAMMA RAYS. THE REACTION ACTIVATION ENERGY
  IS 7.7 KCAL-MOLE. THE FOLLOWING RELATIONS ARE OBEYED UPSILON IS
  APPROXIMATELY EQUAL TO I PRIMEO.5 IS APPROXIMATELY EQUAL TO (C MINUS C
  SUBM) PRIMEO.5 IS APPROXIMATELY EQUAL TO EXP(NEGATIVE 4600-RT) WHERE
  UPSILON IS THE REACTION RATE, I IS THE IRRADN. INTENSITY, C IS THE
  CONCN. OF II, AND C SUBM IS THE CRIT. I CONCN. OF THE MICELLE FORMATION.
       FACILITY: FIZ. KHIM. INST. IM. KARPOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR   UDC: 8.74

GAAZE-RAPOPORT, M. G., LUKIANOVA, S. N.

"On a Graph Analysis Program"

V sb. Tsifr. vychisl. tekhnika i programmir. (Digital Com-
puter Technology and Programming--collection of works), vyp.
7, Moscow, "Sov. radio", 1972, pp 107-120 (from RZh-Kiber-
netika, No 8, Aug 72, Abstract No 8V657)

Translation: The paper describes a digital computer program
for solving the problem of representing a graph in stacked
parallel form with isolation of the "residue" of the graph
which contains cycles. Authors' abstract.

1/1

USSR

UDC   621.371.334

LUKIN, A. A. and CHERKASHIN, Yu. N.

"Diffraction of Pulses of Various Shapes by Screens (in the Uniform Ionosphere) and in the Nonuniform Ionosphere"

Translation: Two equally correct methods are presented of computing the distortion in the shape of the envelope signal in problems of dispersion by a screen and propagation in nonuniform dispersive media: the Adamar-Klein method, based on solutions of the Maxwell equations in the form of series, and the Fourier transform method. The Adamar-Klein method is definitely universal. Bibliography of five. A. L.

1/1

USSR

UDC 546.841;543.432.062

LUKIN, A. M., TITOV, V. I., (DECEASED), CHERNYSHOVA, T. V., and YEVDOKI-MOVA, N. N.

"Spectrophotometric Determination of Thorium with Chlorophosphonazo III in Phosphoric Acid"

Moscow, Zavodskaya Laboratoriya, Vol 39, No 10, Oct 73, pp 1174-1175

Abstract: In the determination of thorium with chlorophosphonazo III in phosphoric acid, the reaction takes place in the interval of 2-0.003 molar phosphoric acid with Bear's law observable up to concentrations of 20 micrograms/5 ml thorium for a reagent concentration of 2.5 · 10⁻⁵ molar. This method makes it possible to increase the selectivity of thorium determination in comparison to Zr, Ti, Fe, and other metals and is also more selective than the method using hydrochloric acid. This method has been used for analysis of monazite ores. Two figures, one table, three bibliographic references.

1/1

1/2   031
UNCLASSIFIED
PROCESSING DATE---30OCT70
TITLE--SCATTERING FUNCTION AND QUALITY OF THE IMAGE IN HOLOGRAPHY -U-

AUTHOR-(03)-BUINOV, G.N., LUKIN, A.V., MUSTAFIN, K.S.

COUNTRY OF INFO--USSR

SOURCE--OPTIKA I SPEKTRCSKOPIIA, VOL. 28, APR. 1970, P. 762-765

DATE PUBLISHED----APR70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HCLOGRAPHY, SINGLE MODE LASER, LIGHT SCATTERING, LIGHT
DIFFUSION, IMAGE DEGRADATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1209
STEP NO---UR/0051/70/028/000/0762/0765
CIRC ACCESSION NO--AP0124863
UNCLASSIFIED

CIRC ACCESSION NO--AP0124863   UNCLASSIFIED   PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. APPLICATION OF A METHOD, BASED ON OBTAINING THE IMAGE OF A SHARP EDGE, TO THE DETERMINATION OF THE LINE SCATTERING FUNCTION OF THE HOLOGRAPHIC PROCESS. HOLOGRAPHS OF A RASER BLADE EDGE WERE OBTAINED WITH THE AID OF A SINGLE MODE LASER. EXCELLENT AGREEMENT BETWEEN THE THEORETICAL AND EXPERIMENTAL SCATTERING FUNCTIONS IS OBTAINED FOR COHERENT LIGHT, WHILE DIFFUSE LIGHT IS FOUND TO IMPAIR SUBSTANTIALLY BOTH THE LIMITING RESOLUTION OF THE HOLOGRAPHIC PROCESS AND THE QUALITY OF THE IMAGE.

UNCLASSIFIED

ZYKIN, P. G. and LUKIN, B. YU., Ufa Aviation Institute

"Endurance of Thin Strips of Heat-Resistant Alloys"

Abstract: This work presents the results of an experimental study of fatigue strength during bending of thin strips 0.2 mm thick of the heat-resistant alloys KH18N10T, VZH98, EI602 and EI654 under normal temperature conditions. One end of each of three specimens tested simultaneously was pulled with a constant force, while the other was bent around a cylindrical surface of a certain radius, corresponding to one cycle of loading. The surfaces used had radiuses of 5, 10, 15, 20, 30 and 40 mm. The data produced by this test method can be used to estimate the fatigue strength of products of these materials.

1/1

USSR   UDC 539.214:539.374

LUKIN, B.YU.

"Deformation and Stress During Sag of Metallic Sleeves"

Translation: For solving the problem of elastoplastic deformation of metallic
sleeves the method of variable parameters of elasticity is used and, in part,
the solution of the elastoplastic deformation of bars and bar systems. The
values of the stresses, forces and displacements are obtained on the basis of
a generalization of the Mohr-Maxwell equation with the aid of integral func-
tions of plasticity. As the basis for the calculation of the crimp a circum-
linear beam is assumed, which corresponds in outline to the half-wave of the
crimp. Since the contour and the load are symmetrical the system is doubly
statistically indeterminate.

1/1

USSR

UDC   621.371:551.510.535

LUKIN, D. S. and SPIRIDONOV, Yu. G.

"Use of a Characteristic System for Modeling the Propagation of Radio Waves in the Ionosphere and the Operative Computation of Shortwave Lines of Communication on Analog Machines"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 3 (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 3—collection of works) "Nauka," 1972 pp 61-64 (from RZh—Radiotekhnika, No 10, 1972, Abstract No 10A364)

Translation: On the basis of earlier papers regarding broadened characteristics of systems determining the trajectory, phase, group delay, and field intensity of electromagnetic waves in a three-dimensional nonuniform magnetoactive medium, an algorithm and a program are constructed in the "Algol" language for numerically solving three-dimensional problems of radio wave propagation with real atmospheres taken into account (dependence of the index of refraction on the coordinates and the magnetic field) on earth

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USSR

UDC   621.783:621.371.332:523.4

LUKIN, D. S., SPIRIDONOV, Yu. G., FOMINYKH, S. I., and SHKOL'NIKOV, V. A.

"Investigating Refraction, Doppler Frequency Shifts, Field Intensity, and Caustics in the Radio Transmissibility of the Martian Atmosphere"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 3 (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 3—collection of works) "Nauka," 1972, pp 32-36 (from RZh—Radiotekhnika, No 10, 1972, Abstract No 10A428)

Translation: The refraction and field intensity in the atmosphere of Mars are computed over various trajectories of the Martian artificial satellites in the frequency range of 100-2200 MHz. An empirical formula is obtained for the refraction angle in the ionosphere as a function of the frequency. The Doppler shift introduced by the ionosphere and troposphere is given in terms of the position of the satellite. An investigation is made of the effect of horizontal heterogeneities in the Martian ionosphere on the accuracy of measurements of the electron concentration from the data on the eclipsing of radio communications. Five illustrations, bibliography of three. N. S.

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USSR

UDC 538.51:389

SIKORA, S. V., and LUKIN, I. V.

"Pressing Metrological Problems in the Field of Distance Measuring"

Khar'kov, Ukr. resp. nauch.-tekhn. konf., posvyashch. 50-letiyu metrol. sluzhby USSR, 1972 -- sb. (Ukrainian Republic Scientific and Technological Conference Honoring the 50th Anniversary of the Ukrainian SSR's Metrological Service, 1972 -- Collection of Works), 1972, p 102 (from Referativnyy Zhurnal -- Metrologiya i Izmeritel'naya Tekhnika, No 2, 1972, Abstract No 2.32.447)

Translation: In a number of new fields of technology (space technology, nuclear physics, geophysics, and so forth), when installations with large dimensions (antenna systems, accelerators, seismic strain gauges, and so on) are erected, the error in measuring distances during the adjustment or control of these structures must be no greater than $(1-5) \cdot 10^{-7}$. The most promising systems for achieving this accuracy are laser phase range finders. Over small distances (0.1-10.0 km), reducing the measurement error to 10^{-7} is related to the problem of increasing the modulating frequency of the laser radiation to 500 Meg; that is, to an order that is comparable to the capacities of existing systems. For distances in the 10.0-100.0 km range, reducing the measurement error is related to the problem of precisely measuring the atmosphere's average refractive index. KhGNIIM [Khar'kov State Scientific
1/2

USSR

SIKORA, S. V. and LUKIN, I. V., Ukr. resp. nauch.-tekhn. konf., posvyashch. 50 letiyu metrol. sluzhby USSR, 1972, p 102

Research Institute of Metrology] is conducting a series of projects aimed at creating a special length standard for distances up to 10 km that has an error of less than $5 \cdot 10^{-7}$.

2/2

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USSR

KURGANOV, R. A. and LUKIN, I. V.

UDC   621.371:538.569.4

"Anomalous Absorption in Meteor Radio Ranges"

Translation: A method is given for prognosis of anomalous meteor
radio propagation of several types based on the use of mathematical
criteria of detection and a developed method for measuring the de-
gree of anomalous absorption. One illustration, bibliography of
seven. A. L.

1/1

USSR   UDC 621.396.24:523.53

KURGANOV, R.A., LUKIN, I.V.

"Anomaly Of Meteoric Propagation Of Radio Waves In Polar Latitudes"

V sb. Meteorn. rasprostr. radiovoln (Meteoric Propagation Of Radio Waves--Collection
Of Works), Issue 8, Kazan', Kazan University, 1971, pp 53-58 (from RZh--Radiotekh-
nika, No 9, Sept 1971, Abstract No 9A191)

Translation: With the object of constructing a theory for forecasting meteoric
propagation of radio waves (MPRW) in polar latitudes, measurements were made of the
parameters of MPRW during periods of maximum and minimum magnetic-ionospheric dis-
turbances at an experimental route [trassa]. The temporal variation of the iono-
sphere parameters is compared with the temporal change of the number of recorded
meteorites, which makes it possible to recognize anomalies connected with absorption
in the zone of auroras. The necessity is established for a forecast of anomalies of
the functional relation between change of the characteristics of the ionosphere and
magnetosphere and the changes of the intensity of the Poisson meteor shower regis-
tered at an anomalous and preanomalous hour. 2 ill. 8 ref. N.S.

1/1

USSR

KURGANOV, R.A., LUKIN, I.V.

"Experimental Investigation Of Meteoric Propagation Of Radio Waves In Polar Latitudes"

V sb. Meteorn. rasprostr. radiovoln (Meteoric Propagation Of Radio Waves--Collection Of Works), Issue 8, Kazan', Kazan University, 1971, pp 9-17 (from RZh--Radiotekhnika, No 9, Sept 1971, Abstract No 9A194)

Translation: Data are analyzed from measurements of the parameters of meteoric propagation which, starting in 1957, have been regularly conducted at an experimental transpolar route [zapolyarnyy trass], with coverage of the maximum and minimum magnetic-ionosphere disturbance. The route is oriented with a parallel. Some data on the apparatus are presented. Curves are constructed for the propagation of meteoric reflections by types, the average duration of the meteoric reflections, the daily variation of the number of meteoric reflections, and the fill factor. 6 ill. 5 ref. N.S.

1/1

USSR

BUSHMINSKIY, I. P. and LUKIN, K. B.

UDC: 621.372.832

"Effect on the Coupling of Band Systems Made by Depositing Fine Dielectric Films"

Moscow, Radiotekhnika, No 9, 1972, pp 106-107

Abstract: Various methods of manufacturing band or ribbon line systems used at present have the defect of complicating the process of obtaining small gaps between the conductors for high stability and relatively long-range extension. The authors propose another method for obtaining such gaps that would be very small functionally. This method involves a process of sputtering in a vacuum in which a fine dielectric film with high permeability is deposited on the line in the region of the industrially feasible gap. The process is briefly described, and experiments designed to investigate the change in characteristics of the gap in a band directional coupler with electromagnetic transference, and to measure the transient attenuation and direction before and after the deposition of the film, are sketched. A diagram of the directional coupler is reproduced together with characteristic curves for the film permeability as a function of the wavelength, and for the transient attenuation of

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USSR

BUSHMINSKIY, I. P., et al, Radiotekhnika, No 9, 1972, pp 106-107

UDC: 621.372.832

the directional coupler as a function of the frequency before and after deposition of the film on the ribbon. It is noted that the proposed method broadens the technical possibilities of production and permits structural variations hitherto unacceptable.

2/2

Acc. Nr.: _AM0105463_

Ref. Code: _4R0000_

Zhukov, G. P.; Vasilevskaya, E. G.; Lukin, M. I.

Legal Aspects in Utilization of Artificial Satellites for Purposes of Meteorology and Radio Communication (Pravovyye aspekty ispol'zovaniya iskusstvennykh sputnikov dlya tseley meteorologii i radiosvyazi) Moscow, Nauka, 1970, 170 pp (SL:2035)

TABLE OF CONTENTS:

REEL/FRAME
19880460

Acc. Nr.: *AM* 0105463

The book deals with international problems encountered in connection with scientific and technological progress in the use of satellites for purposes of meteorology and radio communication...

The   authors analyze problems in distribution of radio frequencies for space services, determine international principles in development and operation of long-distance radio communication systems by means of satellites, and the legal status of individual components of these systems - satellites, ground installations and stations.

Reel/Frame
19880461

USSR

UDC 541.183:546.246 - 31: 546.221

ASTAKHOV, V. A., DOBROTIN, R. B., MEYERSON, L. A., LUKIN, V. D., and STEPANOV, G. V., Belorussian Technological Institute imeni S. M. Korov

Abstract: The adsorption of CO_2 and CS_2 by the CaA zeolite, used as a 20% suspension in toluene, was studied. Toluene was selected as the dispersing medium because its molecules are too big to penetrate the micropores of the zeolite used. Binder-free zeolite was used. In addition to the suspension mentioned, also dry powdered zeolite was used in experiments. It was determined that with identical partial CO_2 pressure at equilibrium, the adsorption by a suspension is considerably lower from the adsorption by dry zeolite. At identical molal concentration in toluene solution, adsorption of CS_2 is considerably lower than the adsorption of CO_2.

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UDC 621.791.763.1.03

USSR

RYBAKOV, V. V., LUKIN, V. I., GRINETS, V. D., L'vov Polytechnic Institute

"Utilization of Infrared Emission for Automation Regulation of the Contact Spot Welding Process"

Kiev, Avtomaticheskaya Svarka, No 7, 1971, pp 47-48

Abstract: In this report given at the All-Union Conference on Automatic Control of Welding Processes, Kiev, 13-14 October 1970, six types of AKTS automatic devices for controlling the spot welding process by infrared radiation are described. The time of passage of the welding current was taken as the regulated variable, and the monitored variable is the intensity of the infrared radiation from the surface of the part. Each of the devices has one or two photoelectric heads and a measuring unit. Data are presented from production testing of the AKTS-6 device when welding one part with δ = 2.5 mm to another part with δ = 7.5 mm at three points with a spacing of 17 mm. Comparative data are presented for plant conditions and with deviations of the basic parameters: lowering the network voltage by 16%, lowering the welding current by 15% and increasing it by 20%, and lowering the electrode compression force by 20% and increasing it by 25%. The operating stability of the AKTS-6 devices was checked by welding 975 parts which were checked for tearing apart. The number of test pieces rupturing was 0.4%.

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USSR

sensations in the heart area) which last for 12 h and indicate overstress of the thermoregulatory mechanisms. The data show that lack of air conditioning may lead to significant functional changes as expressed by changes in body temperature and increased lability of the cardiovascular system, and the appearance of neurotic reactions.

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USSR

LUKIN, V. K., and SMIRNOVA, O. Ya.

"Changes in the Functional States of Operators Working in Hot Humid Climates"

Abstract: The functional states of the cardiovascular system were analyzed in the case of 18-22-year-old operators working under hot humid conditions, where the external air temperature ranged from 25 to 30° with a relative humidity of 60-80%. In the workshops the temperatures ranged from $30-36.6^\circ$ and, in individual cases reached 40° with a relative humidity range of 73-82%. Analysis of the results showed that elevated temperatures decreased grip strength by 3-5 kg, facial hyperemia appeared, respiration was accelerated, profuse perspiration was present, and complaints of headache and momentary vertigo were common. In addition, the heart rate was increased from 70 ± 1.9 to 77 ± 3.9 beats/min, the pulse pressure was elevated, and statistically significant decreases in the systolic (from 114 ± 1.8 to 105 ± 2.5 mm Hg) and diastolic (from 77 ± 0.06 to 66 ± 0.06 mm Hg) blood pressures were evident. At 40° the sublingual temperature rose to $38-38.5^\circ$, the heart rate accelerated to 110/min or more, and arterial blood pressure fell from 114/77 to 100/70 (in some cases the fall was outside the normal range, 90/60). Following work under such conditions neurotic changes were noted (general weakness, dull headaches, sleep disturbances, abnormal

1/2

USSR   UDC: 621.317.8

SOKOLOV, B. A., ZHARINOV, A. A., LUKIN, V. S.

"Sorting out Microwire Resistors With Intermittent Failures"

Translation: The authors analyze existing methods for sorting out potentially
unreliable resistors. A procedure is proposed and devices are developed for
sorting out type S5-30 and S5-15 resistors with intermittent failures. It
is shown that it is feasible and necessary to introduce this operation into
the technological process. Resumé.

1/1

USSR

LUKIN, V.V., Candidate of Economic Sciences

"Microfilm in Enterprise Control Systems"

Abstract: This article contains a discussion of the economic aspects of using microfilm in production control. Arguments in favor of using micro-film in data processing and information retrieval systems are based primar-ily on American systems and data and savings obtained by the American govern-ment from using microfilm in its institutions and organizations. It is pointed out that the high cost of setting up a microfilm system generally results from the fact that the information and control systems have been developed beforehand at the enterprises without considering microfilm. Steps in setting up an efficient microfilm reporting, accounting, and control sys-tem are briefly outlined. The general characteristics of the type of com-puter required to handle such a system are briefly mentioned, again based on American experience.

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USSR

PRILEZHAYEVA, YE. N., LUKIN, V. V., SNEGOTSKIY, V. I., NOVITSKAYA, N.
N., LABA, V. I., SHMONINA, L. I., PETUHOVA, A. A., and LEBEDEVA, G.
F., Institute of Organic Chemistry imeni N. D. Zelinskiy, Academy of
Sciences USSR, Moscow

"A New Group of Herbicidal Compounds -- Alkylvinyl Sulfones"

Abstract: A systematic study was made of the relation between herbi-
cidal activity and structure for vinyl sulfones and substances similar
to them under hothouse conditions on potted plants. It was found that
the display of appreciable herbicidal action in these series is due to
the presence of a double bond adjoining the sulfonyl group and pos-
sessing strong electrophilicity. The highest herbicidal activity was
found in vinyl sulfones with normal primary radicals containing 8-10
atoms. These compounds, to which the authors have given the names
Alvisone 8, 9, 10 respectively, showed selectivity of action in hot-
house experiments. Some properties of Alvisones 8 and 10, obtained

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USSR

from chromatographically pure primary n-octyl and n-decyl mercaptans, were compared with the properties of Alvisone-K, obtained from mercaptan concentrate extracted from polysulfide petroleum of the Ishimbay type, as well as Alvisone 8-10 obtained from a mixture of synthetic alcohols C_8-C_{10} (supplied by YU. B. KAGAN and S. M. LOKTEV). Alvisone-K was found to be only slightly inferior to Alvisones 8 and 8-10 in herbicidal activity. Data were obtained on the dosage of "Alvisone" herbicides under field conditions, based on three-year field plot tests conducted at the Pushkin base of the All-Union Institute of Plant Protection (Leningradskaya Oblast), as well as by the Chair of Agriculture of the Soil Biology Faculty of Moscow University (Moskovskaya Oblast).

The results indicate that Alvisone-K possesses a number of properties (e. g., low toxicity for warm-blooded animals, stability under storage) which make it promising for the control of annual di-

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USSR

cotyledonous weeds in carrot plantings. Alvisone can be used as a con-
tact herbicide as a supplement to soil preparations (of the propazine
type etc.). The most convenient way of preparing these α, β -unsatu-
rated sulfones is three-stage synthesis from mercaptans, either in-
dividual ones or mixtures thereof.

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USSR   UDC 539.107.2

TAKIBAYEV, Zh. S., BOOS, E. G., LUKIN, Ye. S.

"Usefulness of the Maximum Pulse Method in Analyzing Double-Particle Reactions"

Abstract: This brief communication is the continuation of an earlier article by the second of the authors named above, published in the same journal (No 4, 1970, p 73), in which he disputed the use of the maximum pulse method first proposed by Brandt, et al (Phys. Letters, Vol 12, 1964, p 57). The current communication also quarrels with Brandt's assertion that this method is even more useful with reductions in the effective masses of bodies A and B or with an increase of energy of the primary particle P_{01} in the two-particle reaction $P_{01} + P_{02} \rightarrow A + B$. The authors prove their point by computing these two factors through the kinematics of the two-particle reaction $PP \rightarrow N_1^* + N_2^*$. They

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USSR ·

TAKIBAYEV, Zh. S. et al, <u>Izvestiya, AN Kazakhskoy SSR -- Seriya</u>
<u>Fiziko-Matematicheskaya</u>, No 6, Nov-Dec 71, pp 53-57 ;

conclude with the caveat that the method leads to the suppression
of a number of background combinations in ($N\pi$) particle sets but
recommend its use for the analysis of PP interactions when the
multiplicity of events is limited and the change in background
distribution for three-particle sets is taken into account.

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USSR

BOROVKOVA, L. B., LUKIN, YE. S., and POLUBOYARINOV, D. N., Moscow Institute of Chemical Technology imeni D. I. Mendeleyev

"Change in the Structure and Characteristics of Industrial Aluminosilicate Refractory Materials at Extended High Temperatures"

Abstract: The subjects of the study were metals and the variations in their structure and characteristics produced after long service under high-temperature conditions in air. Made of 38, 62, and 78% Al_2O_3, and designated by type numbers D-B, V-B, and 107, respectively, the metals were produced by the Semiluksk Plant. A short explanation of the preparation of the specimens is given; they were subjected to heating at 1350°C for 25, 100, and 300 hours, and at 1500°C for 25, 50, and 100 hours in air in an oven with carborundum heaters. The microstructure of transparent slices of the metal was studied, and the state of the crystalline phases was determined by x-ray analysis. Results of the observations are given in tabular form. It is concluded that the change in structure of the aluminosilicate speciments is much less than in pure oxide materials, and that the characteristics of the specimens change only slightly under the stress of heat.

1 /1

Refractory Materials

UDC 666.764.1.001.5

USSR

BOROVKOVA, L. B., ~~LUKIN, YE. S.~~, MAYYER, A. A., and POLUBOYARINOV, D. N., Moscow Institute of Chemical Technology imeni I. D. Mendeleyev

"Changes in Structure and Certain Properties of Industrially Made Basic Refractories on Precipitation Hardening"

Abstract: Data is presented on changes in the structure of ordinary magnesite (MG-1) and periclase spinel refractories (M-9N, PShS-4) produced at the "Magnezit" plant and on some of their properties following long-term heating at high temperatures. The precipitation hardening was performed at 1350°C for 25, 100, and 300 hours, at 1500°C for 25, 50, and 100 hours and at 1700°C for 25 hours. At 1350 and 1500°C, the heating was done in open air in a furnace equipped with carborundum heaters while at 1700°C -- heating was done in a furnace with graphite heaters in a helium atmosphere. The microstructure of the test material was studied on transparent microsections and the composition of the crystalline phases was analyzed by x-ray phase analysis. Structural patterns

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USSR

BOROVKOVA, L. B., et al., Ogneupory, No 8, 70, pp 27-32

of all three refractories are shown in the original article.
The effect of heat treatment on the properties of the refractories
was assessed by changes in apparent density, compressive strength,
buckling, and creep. Both the strength and refractoriness-under-
load showed improvements. The strength of periclase spinel
refractories subjected to precipitation hardening at 1350-1700°C
decreased, while both buckling and creep deformation were at a
level close to that of the initial material.

2/2

USSR   UDC: 539.171.017

BABAYEV, M. K., YEREMENKO, YU. A., LUKIN, YU. T., and TAKIBAYEV, ZH. S.,
Institute of High-Energy Physics, Academy of Sciences Kazahk SSR

"Concerning Angular Distribution Asymmetry of Secondary Particles in the
Center-of-Mass System and Azimuthal Plane With Energies of Several Hundred Gev"

Abstract: Asymmetry in the center-of-mass system of a cosmic-ray shower of
charged particles is usually measured by comparing the number of secondary
particles moving in the forward direction to the number of secondary particles
moving in the reverse direction along the collision axis. This measurement
(alpha) may be augmented by considering two new analogous measurements (beta
and gamma) that may be taken along the mutually perpendicular axis in the
azimuthal plane perpendicular to the collision axis. Several measurements,
comparing alpha and beta, were made of a variety of emissions. The results
show that beta is sufficiently sensitive in 25 to 50 percent of the cases to
provide an indication of asymmetry in emissions based on the single-fireball
model. Beta measurements have the additional advantage of verifying the
direction of the fireball-primary-particle collision axis.
1/1

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USSR   UDC 669.295.476

DRACHEVSKAYA, R. K., ALMAZOVA, N. G., LUKINA, A. G.

"Production of Titanium from Anhydrous Media on a Mercury Cathode"

Nauch. tr. Kazakhsk. Politekhn. In-t [Scientific Works of Kazakh Polytechnical Institute], Alma-Ata, 1971, pp 548-550, (Translated from Referativnyy Zhurnal, Metallurgiya, No 5, 1972, Abstract No 5 G263 by G. Svodtseva).

Translation: A 10% solution of $TiCl_4$ in isobutyl alcohol, with 1 volume of ethylene glycol added to 2 volumes of the solution, was electrolyzed. Each g was poured onto the bottom of the electrolyzer, acting as the cathode, while the anode was a Pt plate. The current density of the cathode was about 440 a/m^2. Electrolysis time 1 hour. Metallic Ti was separated as a finely dispersed black sediment on the surface of the Hg. Following electrolysis, the sediment was washed and filtered by decantation in isobutyl alcohol. Only about 2% of the metal Ti was extracted from the initial solution.

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89718x   Preparation of methyl methacrylate from meth-acrylonitrile. Mekhtiev, S. I.; Dalin, M. A.; Guseinov, A. G.; Sleptsova, O. M.; Lukina, E. M.; Polchaev, R. A. (USSR). Dokl. Akad. Nauk USSR 1970, 190(1), 108-9 [Chem] (Russ). Me methacrylate (I) was prepd. in 86.2% yield in a continuous reactor by heating equimolar amts. of methacrylonitrile and 81% H₂SO₄ 30 min at 100°, followed by heating the intermediate methacrylamide with 2 moles McOH 2 hr at 95°. I (87.8%) was also obtained when the process was run in a 60-l. exchange reactor.   DBJK

REEL/FRAME
19780624

USSR   UDC: 621.791.3.052:622.336+669.18.2/.8

LUKINA, E. YU., Candidate of Technical Sciences, KOKINA, T. A., Engineer, and
KRAVETSKIY, G. A., Candidate of Technical Sciences

"Particulars on the Thermal Expansion of Graphite-Metal Soldered Joints"

Moscow, Svarochnoye Proizvodstvo, No 6, Jun 73, pp 36-37

Abstract: The authors study the thermal expansion of specimens in the 20-500°C
interval. Soldered specimens made from GM3 graphite and St3 steel were used. These
were soldered at 1155°C at a heating rate of 575 and 40°C/minute. The study was
carried out in the Shevenara (DR-49) horizontal quartz dilatometer. The maximum
measurement error for the average linear coefficient of thermal expansion was
+0.2·10⁻⁶1/°C. Cylindrical specimens 3.5mm in diameter and 40mm long were used
for measurement purposes. X-ray quality control shows that the specimens differ
with respect to each other according to the depth of metal penetration into the
graphite, and with respect to the nature of the distribution of the metallic
inclusions in the transition zone of the joint. The results show that the
coefficient of thermal expansion for the graphite-steel soldered specimens exceeds
the index by seven percent, where the index is obtained by the computational
method from the conditions for the additivity of the thermal expansion of carbon
and steel. An evaluation of the thermal expansion of the zone of soldering shows
that the coefficient of thermal expansion is determined by the depth and nature

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USSR

LUKINA, E. YU., et al, Svarochnoye Proizvodstvo, No 6, Jun 73, pp 36-37

of the graphite penetration by the metal. This depends on the general value of porosity and on the distribution of pores with respect to size.

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USSR   UDC 546.26-162

LUTKOV, A. I., VOLGA, V. I., DYMOV, B. K., LUKINA, E. YU., and TAMARIN, P. V.

"Thermal and Electrical Properties of Pyrolytic Graphite"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, No 8,
1972, pp 1409-1416

Abstract: The authors studied the thermal and electrical properties of pyrolytic
graphite produced by deposition of the products of pyrolysis of methane at 5-10 mm
hg on the hot surface of polycrystalline graphite. Due to the comparatively low
deposition temperature (2100°C), this pyrolytic graphite is initially high in
defects. Following additional high-temperature annealing (3000°C and higher),
the external appearance and x-ray structural analysis data of the material were
similar to those of natural graphite single crystals. The heat conductivity,
electrical conductivity, thermal expansion, and heat capacity of this graphite
were studied. The electron heat conductivity was calculated at $T<10°K$. The
mean defect-free area diameter in the crystalline lattice in the direction of
the a-axis was 15000-18000 A. Characteristic crystalline lattice temperatures
were calculated $(\theta_1=200°K, \theta_2=1200°K)$. The width of the forbidden zone in the
direction of crystallographic axis c was 0.7 ev.

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UDC 636.083.37

USSR

KARANFILOV, N. I., Chairman of Kolkhoz imeni M. V. Frunze, Ovidiopol'skiy Rayon, Odesskaya Oblast, Honored Veterinarian, Ukrainian SSR, FAYTEL'BERG, R. O., Doctor of Medical Sciences, TKACHENKO, G. P., Candidate of Biological Sciences, Senior Scientific Associate, Odessa State University imeni M. I. Mechnikov, MEDVEDEVA, Ye. I., Doctor of Biological Sciences, PANCHENKO, K. A., PETRENKO, Ye. V., LUKINA, G. D., Senior Engineers, BOYKO, L. I., and SELICH, Ye. F., Engineers, Odessa Technological Institute of the Food Industry imeni M. V. Lomonosov

"The Effect of a Preparation Obtained From Algae (Phyllophora) Upon the Weight Gains and Blood Composition of Calves"

Moscow, Zhivotnovodstvo, No 3, Mar 72, pp 82-83

Abstract: A valuable preparation containing amino acids and peptides has been developed from industrial Phyllophora waste by the Odessa Technological Institute of the Food Industry (Author's Certificate No 287959). Employed as a fodder supplement, 4.5 kg of the preparation yield an incremental weight gain of 11.43 kg, in other words, 2.54 kg of meat for each kilogram of the preparation, which costs less than 30 kopeks. The erythrocyte number of the calves increases, as does the hemoglobin content and the total protein content. Additional testing is recommended.

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LUKINA, L.V.

15

IV. INTERACTION OF SHOCK WAVES WITH SOLIDS

Batsanov, S. S., Ye. V. Dulepov, E. M.
Moroz, L. V. Lukina, and V. V. Roman'-
kov. Effect of explosions on materials.
Shock compression of rare earth metal
fluorides. FTdTv, no. 2, 1971, 266-269.

Results of a study of shock compression of ten rare earth
metal (REM) fluorides and yttrium fluoride are presented. It is shown
that the greatest physical characteristics change occurs using 30-50 g
hexogene charge, with the exception of CeF_3 and PrF_3 for which the
most significant changes occur using 100-150 g charges. All the shock-
compressed materials displayed optical anisotropy, since the initial
materials were finely dispersed and therefore were pseudoisotropic.
The new phase is normally inhomogeneous, and the properties change
occurs (or accumulates) in different grains with varying intensity; the
value of the effect is maximal only in a small number of crystalline
particles. Table 1 shows refractivity indices of the new phases:

Table 1. a - compound, b - initial
material, c - compressed material

TITLE--ADDITION OF A GRIGNARD REAGENT TO THE DOUBLE BOND OF CYCLOPROPENE
  HYDROCARBONS -U-
AUTHOR-(03)-LUKINA, M.YU., RUDASHEVSKAYA, Y.YU., NESHEYANOVA, O.A.

COUNTRY OF INFO--USSR

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DATE PUBLISHED-------70

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  NMR SPECTRUM

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PROXY REEL/FRAME--1992/2007   STEP NO--UR/0020/70/190/005/1109/1112

CIRC ACCESSION NO--AT0112963
                        UNCLASSIFIED

CIRC ACCESSION NO--AT0112963
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   REACTION OF RMGX, WHERE R WAS
SELECTED FROM ME, ET, PR AND BU AND X FROM BR OR I, WITH
1,3,3,TRIMETHYLCYCLOPROPENE (I) OR 1,METHYLCYCLOPROPENE (II) WAS RUN
WITH 10-15PERCENT EXCESS OF THE HYDROCARBON AT SIMILAR TO 0DEGREES
OVERNIGHT IN INERT ATM., AFTER WHICH THE EFFLUENT GAS WAS IDENTIFIED
(THIS AMOUNTED TO 1-4PERCENT CH SUB4-C SUB4 H SUB10, RESP.) AND THE
REACTION MIXT. POURED ON DRY ICE AND ACIDIFIED TO GIVE THE RESP.
CARBOXYLIC ACIDS, WHICH WERE CHARACTERIZED BY THEIR NMR SPECTRA EITHER
DIRECTLY OR AS ME ESTERS.   NO CYCLOPROPENECARBOXYLIC ACIDS WERE DETECTED
IN ANY OF THE EXPTS.   I AND MEMGI GAVE 83PERCENT
2,2,3,3,TETRAMETHYLCYCLOPROPANE,1,CARBOXYLIC ACID, M. 117-18DEGREES
(HYDROLYSIS OF THE REACTION MIXT. GAVE 1,1,2,2,TETRAMETHYLCYCLOPROPANE);
I AND ETMGBR GAVE 40PERCENT
CIS,2,2,3,TRIMETHYL,3,ETHYLCYCLOPROPANE,1,CARBOXYLIC ACID, M.
80-1DEGREES; II AND RMGBR GAVE
CIS,2,METHYL,2,(R,SUBSTITUTED)CYCLOPROPANE,1,CARBOXYLIC ACID: R EQUALS
ET, 78PERCENT, B SUB12 106-7DEGREES, N PRIME20 SUBD 1.4468; R EQUALS PR,
19.5PERCENT, B SUB7 108-10DEGREES, 1.4489; BU, 36.5PERCENT, B SUB26
156-8DEGREES, 1.4485.   THE GEMINAL POSITION OF THE TWO ALKYL GROUPS IN
REACTIONS OF II WAS CONFIRMED BY THE NMR SPECTRA.   THUS THE MAIN
DIRECTION OF THE REACTION IS CIS ADDN. OF RMGX TO THE DOUBLE BOND WITH
THE ALKYL GROUP GOING TO THE C ATOM OF CYCLOPROPENE WHICH IS
SUBSTITUTED, WHILE MG GOES TO THE UNSUBSTITUTED C ATOM OF THE RING.
ONLY 1-4PERCENT OF THE REACTION PROCEEDS VIA REPLACEMENT OF ACTIVE H.
     FACILITY: INST. ORG. KHIM. IM. ZELINSKOGO, MOSCOW, USSR.
                       UNCLASSIFIED

USSR

UDC: 681.3

ZHAK, D., LUKINA, V., NASHLYUNAS, R.

"Experiment in Use of the 'RUTA-701' Device in the System of the Soviet
Central Statistical Administration, and Calculations of the Effectiveness
of its Use"

V sb. Elektronno-vychisl. tekhn. i programmir. (Computer Technology and
Programming—collection of works), vyp. 3, Moscow, "Statistika", 1970,
pp 39-49 (from RZh-Kibernetika, No 7, Jul 71, Abstract No 7V699)

Translation: A description is given of the first experiment in using
the "RUTA-701" reader in the system of the Soviet Central Statistical
Administration for automatic readout of normalized handwritten symbols
from blanks containing statistical information. Calculations are pre-
sented on the economic effectiveness of using this device. Authors'
abstract.

1/1

USSR

UDC 619:616.988.6-097:636.5

KOROVIN, R. N., KREYMER, Yu. Ye., MATYUSHKOV, V. S., LUKINA, Y. A., NIKITIN,
Ye. Ye., and KUDRYAVTSEV, F. S., All-Union Research Institute of Fowl
Diseases

"The Effectiveness of Crude Viral Vaccine Against Marek's Disease"

Abstract: A turkey herpesvirus antigenically related to the virus responsible
for Marek's lymphoma was grown in chick embryo fibroblasts and utilized as a
vaccine. The efficacy of the vaccine was tested on 1 day old chicks immunized
intramuscularly with 500 PFU in 0.2 ml during an epizootic oubbreak in Latvia.
Mortality due to Marek's disease was 3.2-4.5 times less among the immunized
chicks than among the unimmunized controls. Although 100% protection was
not afforded the immunized chicks, the economic gains from an effective
vaccine are obvious and indicate the importance of prophylactic immunization.

1/1

LUKINOV, I.

Econ

CAPITAL INVESTMENT EFFECTIVENESS IN AGRICULTURE

Article by I. Lukinov, VASKhNIL corresponding member and director of the Ukrainian Scientific Research Institute for the Economics and Organization of Agricultural Production: "The Effect of Capital Investment", Moscow, Izvestiya, Russian, 21 December 1972, P 2

This Five-Year Plan envisions the channeling into agriculture of an unprecedented amount of capital investments -- nearly 129 billion rubles. The recently concluded Third Session of the Supreme Soviet USSR determined the funds that are to be channeled into the branch in 1972 -- 27.6 billion rubles. Moreover, 29.5 billion rubles will be invested over the Five-Year Plan period in the branches supplying agriculture with equipment, mineral fertilizers, concentrated feed, electric power, and other industrial articles. The main task now is to use these funds with maximum effectiveness. For this direction, what period, and what qualitative indicators the capital investments will be made in are the growth rate and the structure of fixed capital. And this means the overall nature of the development of production and its effectiveness.

Increasing the amount of capital investments and accelerating the putting of fixed capital into operation require in turn a corresponding and at times a more rapid increment of fixed capital so as to ensure the requisite structural proportions between them. This is the only way to obtain the highest economic effect, i.e., to obtain the highest possible amount of output and income for every ruble's worth of aggregate input.

Today many farms of the Ukraine are annually investing 200,000-350,000 rubles each to expand fixed capital and spend 400,000-500,000 rubles each for current expenses. On large collective and state farms, capital investments total 800,000-900,000 and on some even 1-1.5 and more million rubles. The collective farm average investments (including capital repair) in 1970 exceeded 950,000 rubles in Krymskaya Oblast, 933,000 in Khersonskaya Oblast, and 400,000-450,000 in Voroshilovgradskaya, Dnepropetrovskaya, Zaporozhskaya, Nikolayevskaya and Odesskaya Oblasts.

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An enormous, consistently increasing amount of funds is being put into circulation. What is observed is the construction of large objects where business can be conducted on an industrial basis. Here the concentration of efforts, broad coordination, and the centralization of funds on the scale of economic associations are frequently required. In other words, there arisen, besides the internal investments directly in production, the necessity for constructing enterprises beyond the framework of a farm. It is not fortuitous that collective and state farms are taking an ever-increasing part in the activity of interkolkhoz construction and land improvement organizations and constructing joint enterprises for the processing and storage of products. What is being successfully achieved in such cases is the strict planned development and optimum expenditure of the source of reproductive turnover in all its stages, the avoidance of losses and nonproduction outlays. We adhere to the development of direct integration ties both horizontally (between agricultural organizations) and vertically (between agriculture and industry), to the further improvement of economic relations in the direction most effective for society.

Farms channel the basic part of their funds into developing production -- the construction of animal husbandry farms, water resources construction, equipment acquisition, the planting of perennial plants, and so forth. The increment of fixed and circulating capital here must ensure the planned output growth rate. In the Ninth Five-Year Plan the growth rate of capital will for a number of reasons outstrip the increment of the gross agricultural product, which fact thrusts to the fore the problem of capital investments.

Arising here are two interconnected practical tasks: That of developing on every farm a firm base for obtaining an income that would really cover planned investments and that of ensuring capital enabling the highest return to be obtained. No less significant is the rational use of credit resources and budgetary funds that are being channeled into the Five-Year Plan period above all into the development and reconstruction of the largest economic complexes.

Farms that are even located close to each other are frequently affected by diverse natural and economic conditions. This is why their outlays and results differ. The most effective variant is the following: Additional investments are accompanied by the accelerated growth rates of output and income. In such a situation product cost and capital-output ratio are generally lowered, and farm profitability is increased. These enterprises usually have quite large specialized branches, an efficiently smooth management system, one that is close to the funds' optimum structure. However, the proportion of such forms is still comparatively low.

More widespread is the second variant, when the increment of output and income proceeds at rates roughly equaling the increase of

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USSR

UDC: 533.951.2/.3

BASHARINOV, A. Ye., ZALOGIN, N. N., KISLOV, V. Ya., LUKINOV, I. N.

"Investigation of Mechanisms of Excitation of Oscillations of Gyroharmonics in a Plasma-Beam Discharge"

V sb. Kolebaniya i volny v plazme (Oscillations and Waves in a Plasma-- collection of works), Minsk, "Nauka i tekhn.", 1971, pp 43-46 (from RZh- -Mekhanika, No 7, Jul 71, Abstract No 7B186)

Translation: An experimental study is made of oscillations excited in a plasma-beam discharge in a magnetic field on frequencies $\omega > \omega_0 \approx \omega_p$. It is shown that there is spatial amplification on harmonics of the cyclotron frequency and on the structure of fields in the form of the composition of slow and fast waves. Emission of the fast transverse wave takes place in the region of abrupt change of fields of the fast wave. Authors' abstract.

1/1

USSR   UDC 615.217.24.092:616-003.922.1.04

KORABLEV, M. V., LUKIYENKO, P. I., and SPAS, V. V., Chairs of Pharmacology and
Hospital Surgery, Grodno Medical Institute, Grodno

"The Antihypoxic Activity of Apressin"

Abstract: Apressin (1-hydrazinophthalazine HCl), on being injected to rats and
mice subcutaneously 60 min before the experiment, protected the animals from
death resulting from hypoxia on reduction of the air pressure in a chamber to
a level at which all control animals died. Injections of apressin increased
by 48% the rate of survival of rats with circulatory hypoxia of the brain
produced by tying up the carotid arteries. Apressin in a dose of 6 mg/kg
increased the resistance of the heart and brain of rabbits to hypoxia produced
by stopping for 5 minutes artificial respiration that was applied on exclusion
of natural respiration by the administration of diplacin. The bioelectric
activity of the brain was preserved in the experimental animals for a length
of time greater by 52% than that for control animals. On being administered
prophylactically per os to patients with gastrointestinal ulcers subjected to
surgery, apressin prevented in 57% of cases the development of hypoxia during
1/2

USSR

KORABLEV, M. V., et al., Eksperimental'naya Khirurgiya i Anesteziologiya, No 1,
Jan/Feb 73, pp 72-75

endotracheal ether-oxygen anesthesia. Under the effect of the drug, the con-
centrations of lactic and pyruvic acids in the blood of the patients decreased.

2/2

1/2   030   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--EFFECT OF APRESSIN ON OXYGEN CONSUMPTION, TISSUE RESPIRATION, AND
 THE ACTIVITY OF SOME OXIDOREDUCTASES IN INTACT RATS AND IN RATS
AUTHOR--LUKIYENKO, P.I.

COUNTRY OF INFO--USSR

SOURCE--FARMAKOL. TOKSIKOL. (MOSCOW) 1970, 33(2), 196-9

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ORGANIC AZINE COMPOUND, TISSUE PHYSIOLOGY, BRAIN, OXYGEN
 METABOLISM, SUCCINATE DEHYDROGENASE, LIVER, HEART, HYPOXIA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0133   STEP NO--UR/0390/70/033/002/0196/0199

CIRC ACCESSION NO--AP0120833
                              -------UNCLASSIFIED-------

CIRC ACCESSION NO--AP0120833
ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. APRESSIN (HYDRALAZINE HCL) AT 6
MG-KG GIVEN S.C. TO RATS REDUCED TOTAL O CONSUMPTION AND THE RATE OF ITS
UTILIZATION IN THE BRAIN. IN POSTHYPOXIC ANIMALS, THE DRUG ENHANCED O
ASSIMILATION. IN BOTH GROUPS OF ANIMALS, APRESSIN REDUCED SUCCINIC
DEHYDROGENASE ACTIVITY IN THE BRAIN, LIVER, AND HEART, AND IT ALSO
REDUCED THE INHIBITING EFFECT OF HYPOXIA ON CYTOCHROME OXIDASE ACTIVITY.
      FACILITY: GRODNENSKOGO MED. INST., GRODNO, USSR.

UNCLASSIFIED

1/3   011   UNCLASSIFIED   PROCESSING DATE--02OCT70
TITLE--METHOD FOR DETECTING LAYERS OF REDUCED VELOCITY IN THE EARTH'S
CRUST AND MANTLE. METHOD FOR DISCRIMINATING THE CRUST AND MANTLE LAYER
AUTHOR-(03)-LUKK, A.A., NERSESOV, I.L., CHEPKUNAS, L.S.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, IZVESTIYA AKADEMII NAUK SSSR, FIZIKA ZEMLI, NO. 2, 1970,
PP. 15-20
DATE PUBLISHED-------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--EARTH CRUST, EARTH MANTLE, EARTHQUAKE, EPICENTER, SEISMIC WAVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/0028   STEP NO--UR/0387/70/000/002/0015/0020

CIRC ACCESSION NO--AP0108413
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0108413

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD IS DESCRIBED FOR DISCRIMINATING LAYERS WITH REDUCED VELOCITIES IN THE CRUST AND MANTLE FROM THE BODY WAVES OF EARTHQUAKES. THE METHOD IS APPLICABLE IN THE CASE OF DETAILED SEISMIC OBSERVATIONS. ITS EFFECTIVE USE REQUIRES A QUITE DENSE NETWORK OF STATIONS FOR THE SUFFICIENTLY PRECISE DETERMINATION OF THE COORDINATES OF EARTHQUAKE FOCI. THE ACCURACY OF THEIR DETERMINATION MUST MAKE IT POSSIBLE TO SEPARATE EARTHQUAKE FOCI BY DEPTH EACH 5 KM IN THE CRUST AND EACH 20 KM IN THE MANTLE AND DETERMINE THE COORDINATES OF EPICENTERS WITH AN AVERAGE ACCURACY OF PLUS OR MINUS 5 KM. IT IS ALSO NECESSARY TO HAVE A PROFILE OF STATIONS ALONG THE LINE WHERE A CROSS SECTION IS TO BE CONSTRUCTED WHICH HAS A LENGTH AT LEAST FOUR TIMES GREATER THAN THE MAXIMUM DEPTH OF THE FOCI OF THE USED EARTHQUAKES. THE MAXIMUM LENGTH OF THE OBSERVATION PROFILE IS LIMITED BY THE EXTENT OF THE REGION IN WHICH DIRECT FORWARD WAVES ARE TRACED IN THE FIRST ARRIVALS. THE QUALITY OF THE INITIAL DATA MUST BE SUCH AS TO ENSURE AN ACCURACY IN DETERMINING THE TIME OF FIRST ARRIVALS IN THE RANGE PLUS OR MINUS 0.05-0.1 SEC. THE QUANTITY OF INITIAL DATA IS DETERMINED BY THE NUMBER OF SOURCES; FOR EACH SUCH SOURCE THERE MUST BE 8-10 EARTHQUAKES, THERBY MAKING POSSIBLE A RELIABLE DETERMINATION OF THE TRAVEL TIME CURVE FOR A SOURCE WITH A FIXED DEPTH. A GROUP OF SOURCES WITH UNIFORM DISTRIBUTION IN DEPTH IS REQUIRED BOTH IN THE LAYER ITSELF AND ABOVE AND BELOW IT FOR A RELIABLE DETECTION OF THE LAYER OF REDUCED VELOCITY OF PROPAGATION OF BODY WAVES.

UNCLASSIFIED

CIRC ACCESSION NO--AP0108413
ABSTRACT/EXTRACT--THE ACCURACY IN DETERMINING EARTHQUAKE HYPOCENTERS IS OF
PARTICULAR IMPORTANCE AND MUST BE CAREFULLY INVESTIGATED IN EACH
SPECIFIC CASE.   THIS PAPER GIVES THE RESULTS OF APPLICATION OF THIS
METHOD TO STUDY OF THE CRUST AND MANTLE IN THE GARM REGION AND THE PAMIR
HINDUKUSH EPICENTRAL ZONE.

UNCLASSIFIED

L

USSR

UDC 621.385.5:681.3

BLEYVAS, I. M., LUKOSHOV, V. S., MIKHAYLUS, F. F., POBEDONOSTSEV, A. S., SAZONOV, V. P., SILIN, R. A.

"Machine Methods of Planning Microwave Electrovacuum Devices -- Means of Increasing the Efficiency of Development"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 4, pp 74-97 (from RZh--Elektronika i yeye primeneniye, No 7, July 1970, Abstract No 7A118)

Translation: The basic problems of machine planning of microwave electrovacuum devices are formulated, and some concrete examples of machine planning in the area of electronics, electrodynamics, and electron optics are considered. Problems are discussed of the creation of a system of procedure in machine planning and problems in the area of machine planning of microwave electrovacuum devices. 55 ref. Summary.

TITLE--EVALUATING THE KINETICS OF VULCANIZING RUBBER MIXTURES ACCORDING TO
A DYNAMIC MODULUS UNDER VARIABLE TEMPERATURE CONDITIONS -U-

AUTHOR-(05)-NECHIPORENKO, A.G., LUKOMSKAYA, A.I., MILKOVA, YE.M., PUKHOV,
A.P., SHMIGELSKIY, V.K.

COUNTRY OF INFO--USSR

SOURCE--KAUCH. REZINA 1970, 29(3), 17-19

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--SHEAR STRESS, VULCANIZATION, ELASTIC MODULUS, RUBBER WORKING
MACHINERY, AUTOMATIC CHEMICAL PROCESS CONTROL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0529   STEP NO--UR/0138/70/029/003/0017/0019

CIRC ACCESSION NO--AP0119448
UNCLASSIFIED

CIRC ACCESSION NO--AP0119448
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN APP. WAS DESIGNED WHICH
AUTOMATICALLY RECORDS THE AMPLITUDE OF THE DYNAMIC SHEAR STRESS APPLIED
TO A RUBBER SAMPLE BEING VULCANIZED AT CONSTANTLY INCREASING
(PROGRAMMED) TEMP. THE READINGS ARE PROPORTIONAL TO THE CHANGING
DYNAMIC ELASTICITY MODULUS OF THE SAMPLE AND PERMIT DETN. OF THE OPTIMUM
VULCANIZATION TIME POSSIBLE IN A GIVEN TEMP. REGIME.   FACILITY:
ONEPROPETROVSK. SHINNYI ZAVOD., DNEPROPETROVSK, USSR.

UNCLASSIFIED

USSR   UDC 535.33 : 621.382.2

SIROTA, N. N., LUKOMSKIY, A. L.

"Recombination Radiation of Aluminum Antimonide pn Junctions"

Minsk, Zhurnal Prikladnoy Spektroskopii, No. 5, May 71, pp 937-938

Abstract: The spectrum of recombination radiation of pn junctions prepared from aluminum antimonide single crystals is discussed. Graphs of the current-voltage characteristics and the spectrum of the recombination radiation of aluminum antimonide diodes are given. The spectrum of recombination radiation of the diodes was made at current densities of the order of 30 a/cm^2 and at a temperature of 77°K. The radiation spectrum of the diodes shows that the maximum of the radiation intensity corresponds to a photon energy of 1.28 ev, which is considerably less than the width of the forbidden zone of aluminum antimonide. It is pointed out that F. Kover in 1958 noted the presence of a photoconductivity peak in aluminum antimonide at 1.27 ev and considered this to be an impurity effect.

1/1

USSR

BEKHTEL', E., Head Psychiatrist, Oblast Public Health Department, Candidate of Medical Sciences, and LUKOMSKIY, I., Professor, Head of the Department of Clinical and Social Narcology, Moscow Scientific Research Institute of Psychiatry

"Program for Activities Enhancing Discipline"

Moscow, Meditsinskaya Gazeta, 31 May 72, p 2

Abstract: The system of hospitalizing alcoholics in psychiatric departments has the serious drawback that similar treatment is given to both types of patients. Psychiatric patients must be given special consideration, because they are afflicted with diseases which are beyond their control. Most alcoholics, on the other hand, become physically and mentally incapacitated only after they drink to excess. Therefore, passive confinement to a hospital room, which breeds the attitude "our business is drinking, while curing us is the physicians' business," will never bring that cure about. On the basis of this consideration, a number of pioneering institutions have opened wards for alcoholics only, where their day is completely filled with work and other activities. By dividing and rotating household duties, the patients take care of themselves and the facilities. Each ward is treated as a unit with collective responsibility, that is, violation of discipline committed by one
1/2

USSR

BEKHTEL', E., and LUKOMSKIY, I., Meditsinskaya Gazeta, 31 May 72, p 2

patient discredits the whole ward, resulting in social pressure on the cul-
prit. Special arrangements are made with neighboring productions plants and
other business organizations for employment. From a variety of jobs offered,
each patient selects one according to his preference and the physicians'
recommendations. The employer gains free labor force, while the patients are
offered free training and the opportunity to reenter normal life and to re-
establish normal human relations. Occupational therapy, which creates new
prospects for economic and social adequacy, is just as important as medical
and psychiatric therapy. The objective of the strict regimentation of the
daily routine is to develop self-discipline in the patients because, after
they are discharged and resume private lives, self-discipline is the ultimate
factor which will hold them back from drinking.

2/2

USSR   UDC   621.472:662.997

LUKOMSKIY, S. M. and KOROTAYEV, A. M.

"Thermoelectrical Heat Insulation for Outer Protection"

Tashkent, Geliotekhnika, No. 4, 1971, pp 69-75

Abstract: The deficiencies of thermal pumps using solar energy for
heating and cooling are examined, and measures which can be taken
to ameliorate those deficiencies are considered. These deficien-
cies, which exist both in foreign and Soviet machines, are primarily
the energy losses due to the irreversible heat exchange between the
operating agent and the upper and lower heat source in the conden-
ser and the vaporizer, or between the seams and the heat sources in
semiconductor heat pumps. The use of air and of "absolute" outer
insulations is discussed, and the directions of heat flows in thermo-
electric heat insulators as well as the effect of types of construc-
tion of the latter on their efficiencies are considered. Also given
are the results of research on the efficiency of thermoelectrical
heat insulators during the hot seasons in Krasnoyarsk, Kiev, and
Baku. Calculations performed with this data for the three cities
showed that, through the use of semiconductors with an efficiency
1/2

USSR

LUKOMSKIY, S. M. and KOROTAYEV, A. M., Geliotekhnika, No 4, 1971, pp 69-75

of $2 \cdot 10^{-3}$ per degree, the average economy in electrical energy was from 1.4 to 2.4 times that of direct heating. The authors are associated with the State Scientific Research Power Institute imeni G. M. Krzhizhanovskiy. ·

2/2

SSSR   UDC 621.3.078

LUKOMSKIY, YU. A., and PAMBUKHCHYAN, S. V., Leningrad Electrotechnical Institute imeni V. I. Ul'yanov (Lenin)

"The Design of a Multichannel Automatic System with Limits on the Control Actions"

Abstract: A controlled system is subject to external perturbations. The controlling actions are limited in absolute strength, but the limits are sufficiently high to permit compensation, complete controllability, and system stability. These conditions are expressed in terms of a supplementary coordinate, yielding a system of nonlinear differential equations which describe the automatic system. The optimum control signals are determined in accordance with the Pontryagin maximum principle. Three basic regions are determined: where no control action is limited by the restrictions, where all control actions are at the permissible maximum, and where some of the control actions are extremal and others are not. In the first region the equations determining the optimal control actions are linear; in Volume 15, No 8 of this journal, Lukomskiy and Voskobovich showed that the independent variable t could be excluded to yield an expression which uniquely determines the structure and parameter of optimal feedback relationships in this region.
1/2

USSR

LUKOMSKIY, YU. A. et al., Leningrad, Izvestiya Vysshikh Uchebnykh Zavedeniy
Priborostroyeniye, Vol 17, No 1, 1974, pp 47 - 50

When all control actions are at the maximum (saturation) level, further
feedback information is not required and analysis indicates that the feedback
connections should be opened. Where only some of the control actions are at
saturation, their feedback connections should be opened. The remaining control
action feedbacks are in the situation, somewhat similar to the first region, but
the saturated control actions can also be considered as external perturbations.
This is effectively a structural change of the system, and it is accompanied
by changes in the parameters of optimal feedback. The feedbacks which have
been disconnected should be reconnected when the perturbation signal changes
sign. The authors' calculations indicate that a variable structure system has
better dynamic characteristics than a system of constant structure which
ignores saturation of the control signals.

2/2

- 8 -

USSR

ARKHANGEL'SKIY, Ye. A., ZNAMENSKIY, A. A., LUKOMSKIY, Yu. A.,
CHERNYSHEV, E. P.

"Modeling on Analog Computers"

Modelirovaniye na Analogovykh Vychislitel'nykh Mashinakh [English Version
Above], Leningrad, Energiya Press, 1972, 208 pages (Translated from
Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V815 A).

Translation: This book was designed by the authors to be a brief manu-
script, to reflect not so much the structure of an analog computer as
the peculiarities and various methods of modeling of a broad range of
scientific and technical problems on analog machines.

1/1

1/2   027   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--DIRECT COPPERING OF ALUMINUM AND ALUMINUM BASED ALLOYS -U-

AUTHOR-(04)-LUKOMSKIY, YU.YA., ALEKSANDROVA, A.N., TIKHOMIROVA, G.S.,
KUPTEVA, R.V.
COUNTRY OF INFO--USSR

SOURCE--KIEV, TEKHNOLOGIYA I ORGANIZATSIYA PROIZVODSTVA, NO 1, 1970, PP
73-75
DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ALUMINUM ALLOY, ALUMINUM BASE ALLOY, BIBLIOGRAPHY, COPPER
PLATING, METAL COATING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1331   STEP NO--UR/0418/70/000/001/0073/0075

CIRC ACCESSION NO--AP0123289
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0123289
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   PRACTICAL RECOMMENDATIONS ARE
GIVEN FOR DIRECT COPPERING OF ALUMINUM AND ALUMINUM BASED ALLOYS.
REASONS FOR POSSIBLE SPOILAGE ARE INDICATED AND MEANS FOR THEIR
ELIMINATION ARE GIVEN.

UNCLASSIFIED

Luminescence

GROMOV, L. A., LUKONENKO, V. D., TROFIMOV, V. A., Leningrad Technological
Institute imeni Lensovet

"Physico-Chemical Investigation of the Process of Formation of ZnS(Cu)-
Phosphors; Report I: Activation of Zinc Sulfide by Metallic Copper"

Translation: It was established that ZnS(Cu)-phosphors with blue and green
luminescence can be obtained by calcination of deoxidized zinc sulfide with
metallic copper in the absence of oxygen, sodium chloride and other substances
which contribute to the appearance of luminescence centers. The intensity of
luminescence of ZnS(Cu)-phosphors, produced by the activation of deoxidized
zinc sulfide with metallic copper, is analogous to the intensity of these phos-
phors produced in the presence, for example, of potassium chloride. Intro-
duction of free zinc into a charge, which contains deoxidized zinc sulfide
and metallic copper, leads to suppression of green as well as of blue lumines-
cence, and additions of free sulfur -- to the appearance of the centers of
red heat.

1/1

1/2   027   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--PHYSICAL CHEMICAL STUDY OF THE FORMATION OF ZNS(AS) PHOSPHORS -U-

AUTHOR-(03)-GROMOV, L.A., LUKONENKO, V.O., TROFIMOV, V.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(3), 621-6

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--CRYSTAL PHOSPHOR, CHEMICAL REACTION, ZINC SULFIDE, ARSENIDE,
   ARSENIC SULFIDE, THERMOLUMINESCENCE, RADIATION INTENSITY, LUMINESCENCE
   QUENCHING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1137   STEP NO--UR/0076/70/044/003/0621/0626

CIRC ACCESSION NO--AP0124792
                        UNCLASSIFIED

CIRC ACCESSION NO---AP0124792
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CHANGE IN THE OPTICAL
PROPERTIES OF ZNS(AS) PHOSPHORS IN THE REACTION ZNS PLUS ZN SUB3
NEGATIVE AS SUB2 YIELDS 6ZN PLUS AS SUB2 S SUB3 UNDER VARIOUS CONDITIONS
WAS STUDIED. MIXTS. OF ZNS AND ZN SUB3 AS SUB2 WERE HEATED 1 HR AT
1100DEGREES IN AN EVACUATED QUARTX AMPUL. THE CONCN. OF ZN SUB3 AS SUB2
VARIED FROM 5 TIMES 10 PRIME NEGATIVES TO 3 TIMES 10 PRIME NEGATIVE3 G-G
ZNS, AND THE VOL. OF THE AMPUL, VARIED FROM 3.5 TO 50 ML. THE INTENSITY
OF THE ORANGE LUMINESCENCE FIRST INCREASED, THEN DECREASED WITH
INCREASING CONCN. OF ZN SUB3 AS SUB2 IN THE REACTION MIXT. THE CONCN.
OF ZN SUB3 AS SUB2 FOR OPTIMUM INTENSITY DEPENDED ON THE VOL. OF THE
AMPUL AND INCREASED WITH AMPUL VOL. WHEN THE CONCN. OF ZN SUB3 AS SUB2
WAS CONST., THE INTENSITY OF THE ORANGE LUMINESCENCE DECREASED WITH
INCREASING AMPUL VOL. THE AMT. OF FREE ZN INCREASED WITH INCREASED
AMPUL VOL. ADDN. OF ZN TO THE REACTION MIXT. LED TO INCREASED INTENSITY
OF THE ORANGE LUMINESCENCE. THE INTENSITY WAS DECREASED BY ADDN. OF AS
SUB2 S SUB3. THIS WAS EXPLAINED BY REACTION OF AS SUB2 S SUB3 WITH ZN
SUB3 AS SUB2 TO GIVE ZNS AND FREE AS. THE INTENSITY WAS ALSO DEPRESSED
BY THE ADDN. OF S.   FACILITY: LENINGRAD. TEKHNOL. INST. IM.
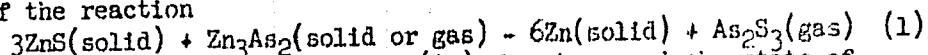LENSOVETA, LENINGRAD, USSR.

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"Physicochemical Investigation of the Formation Process of ZnS(As)-Phosphors"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 44, No 3, Mar 70, pp 621-626

Abstract: Research indicates that the centers of orange luminescence in ZnS(As)-
phosphors are formed during physicochemical conversion of the ZnS-An₃As₂ system,
the chief stages being chemical interaction of the components and diffusion of
arsenic (in the form of negative ions) into the zinc sulfide lattice. The validity
of this interpretation can be checked by studying the way in which optical proper-
ties of ZnS(As)-phosphors are affected by factors which determine the state of
redox equilibrium of the reaction

$$3ZnS(\text{solid}) + Zn_3As_2(\text{solid or gas}) - 6Zn(\text{solid}) + As_2S_3(\text{gas}) \quad (1)$$

The authors studied the optical properties of ZnS(As)-phosphors and the state of
equilibrium of reaction (1) as functions of the concentration of zinc arsenide
in the charge, the volume of the quartz ampules, and the introduction of free zinc,
sulfur, and arsenic sulfide into the charge. The state of equilibrium of reaction
(1) was determined from data on the determination of free zinc. In addition,
chemical interaction was studied in mixtures of zinc arsenide with arsenic sulfide
and with sulfur. It is shown that the intensity of the orange band in ZnS(As)- phos-
phors depends on the state of the ZnS-Zn₂As₂ system. The authors are sincerely grate-
    ...   . in the work and constructive criticism offered

USSR

UDC 51:330.115

LUKOSHKOV, V. V.

"Optimal Placement of Computer Equipment in a Production Control System"

Prom. Kibernetika. Vyp 3 [Industrial Cybernetics, No 3], Kiev, Nauk. Dumka Press, 1971, pp 11-21, (Translated from Referativnyy Zhurnal, Kibernetika, No 10, 1971, Abstract No 10 V732).

NO ABSTRACT.

USSR

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"Dynamics of Changes in Reflexly Conditioned Signals in Vasomotor Nerves, and a Programmed Device for Modeling Them"

Abstract: Research is in process on the possibility that the body's regulatory systems operate in accordance with the laws of optimum control which are now being employed in engineering systems where high-speed, optimum responses are required. In this particular work a study was made of the pattern of brain signals transmitted to vasomotor nerves activating the pressor reflex in response to tetanic stimulation of spinal afferents, and an electronic unit that simulates this pattern was developed. The A+C-afferents of the tibial nerve of anesthetized cats was stimulated tetanically, and the resulting potentials on one of the postganglionic renal nerves and the pressure in the carotid artery were recorded. Upon stimulation, a short (2-4 sec) "positive" signal greatly exceeding background bioelectric activity was recorded, followed by a "negative," inhibitory signal. Pressor reflex amplitude depended entirely

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KHAYUTIN, V. M., et al., Byulleten' Eksperimental'noy Biologii i Meditsiny,
Vol 73, No 5, 1972, pp 3-6

on the intensity of the positive signal. After the negative signal, bio-
electric activity gradually returned to the initial level, as did arterial
pressure. Next a programmed electronic unit was designed for stimulating
cardiovascular nerves in accordance with the pattern of signal strength
changes with respect to time determined above. Output frequency is switched
from constant background frequency to a stepwise-changing pattern of fre-
quencies by pressing a button, at which moment the 1st timing relay engages,
producing a strobing pulse of preset duration and frequency through a multi-
vibrator generator. Its deactivation causes the next relay to trigger, and
so on until the 4th, after which the circuit returns to its initial state.
A circuit diagram and component description are provided.

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